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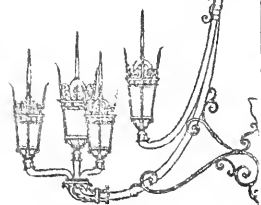
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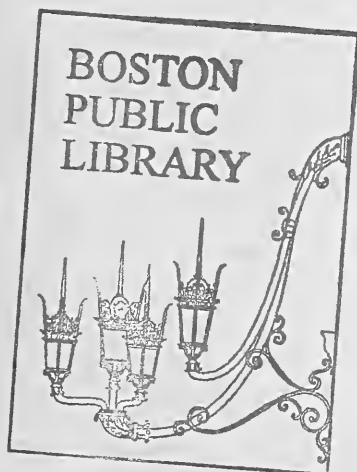
Labor Area Trends

In Supply And Demand

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Fiscal Year
1978 - 1979

Boston SMSA
Massachusetts

The Commonwealth Of Massachusetts
Division Of Employment Security

M36 John F. Hodgman, Director

M38



LABOR AREA TRENDS
IN SUPPLY AND DEMAND
FISCAL YEAR 1978-1979

MASSACHUSETTS/BOSTON SMSA



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INTRODUCTION

Information on the supply and demand of labor is crucial for economic planning and educational planning. For a business to succeed, five critical factors: money, manpower, materials, management, and markets must be sufficiently available. High net demand for labor occurs when the demand for a product or a service is so great that additional workers are needed to meet production requirements timely and efficiently. Individuals who are unemployed desire information on occupations providing best opportunities for stable employment. Manpower training agencies and educational institutions desire to provide vocational training in occupations in which the probability of finding remunerative and satisfying employment is greatest.

Net high demand occupations are those in which the ratio of identifiable applicants to known job openings is presently small and for which projection of employment requirements for the future is high.

Field surveys were conducted in each labor market area. Of particular interest were interregional differences in demand and factors in a labor market area which contribute to supply-demand imbalances in another labor market area. The firms were chosen randomly.

The survey included questions on sources of recruitment. The sources included agencies (public employment, private employment, and educational institutions); advertising (newspaper want ads, trade journals, and professional associations); internal recruitment (rehires, promotions, and referrals from current employees); and direct applications (walk-ins). Sources of recruitment were differentiated from sources of hires. Geographical residence was surveyed in order to determine commuting distance and interlabor area commuting patterns. Minimal educational and experience requirements were differentiated from typical educational attainment levels and actual months of experience of new hires. Data on beginning wages with no experience, beginning wages with one year experience, average wages, and maximum wages for the occupation surveyed were collected. Growth in the occupation was determined by the number of positions in calendar year 1976, 1977, and 1978 to date. Replacement hires and growth hires were differentiated. Employers were asked to project new positions and new hires in 1979 in the occupation.

The Occupational Supply Sources Survey included information on the total graduates in June 1978, estimated graduates in June 1979, and estimated graduates in June 1980. Estimates based on historical experience were obtained on the percent of graduates who remained in the trade and who remained in the Labor Market Area.

NET GROWTH OCCUPATIONS
SUPPLY AND DEMAND STUDIES
BY LABOR MARKET AREA

Boston SMSA: Research and Program Development
Office of Economic Affairs

Computer Programmers
Electronic Technicians
Bookkeepers
Computer Operators
Insurance Adjusters and Examiners
Keypunch Operators
Secretary, Legal
Secretary, Medical
Typists

Clinical Lab Technicians
Dental Hygienists
Licensed Practical Nurses
Sales Representative, Wholesale Trade
Air Conditioning, Heating,
Refrigeration Mechanics
Data Processing Machine
Repair Person

Brockton SMSA

Licensed Practical Nurses
Machinist/Tool and Die Makers
Typists

Fall River LMA

Licensed Practical Nurses
Sewers/Stitchers
Machinists/Tool and Die Makers

Fitchburg-Leominster LMA

Licensed Practical Nurses
Machinists
Cooks/Chefs

Lawrence-Haverhill SMSA

Licensed Practical Nurses
Machinists
Sheet Metal Workers

Lowell LMA

Licensed Practical Nurses
Machinists
Assemblers

New Bedford LMA

Licensed Practical Nurses
Sewers/Stitchers
Checkers/Examiners

Pittsfield LMA

Licensed Practical Nurses
Machinists
Cooks/Chefs

Springfield-Chicopee-Holyoke LMA

Licensed Practical Nurses
Machine Operators/ Machinists
Welders

Worcester LMA

Licensed Practical Nurses
Machinists / Machine Tool Operators
Clerk-Typists

MACHINIST, TOOL AND DIE MAKER, AND MACHINE OPERATOR

Employers Definition of Occupation

There were considerable differences in the definition of machinists from firm to firm in every labor market area. In the Pittsfield Labor Market Area, one personnel manager commented that the definition of a machinist in the Dictionary of Occupational Titles pertained more to an engineer than a machinist. In the Lawrence-Haverhill Labor Market Area, the Lowell LMA, and the Springfield LMA, individuals with titles of machinists who worked in large firms frequently performed the tasks of a machine operator. The situation was complicated by the fact that graduates of vocational-technical schools referred to themselves as machinists but were used by employers as machine operators. In the Brockton SMSA, all-around machinists who could set-up and operate machines and read blueprints were difficult to locate. In the Fall River LMA, the range of skills covered third class machinists to fully experienced tool and die makers. One company employed people who were primarily set-up operators for a specific machine. Another firm referred to Class A Machinists, Class B Machinists, and Tool and Die Makers. Other machinists specialized in fixing very complicated machinery in order to minimize "down-time". In the Springfield-Chicopee-Holyoke LMA, machine operators were in large demand. Many of the larger firms have in-house training programs to train skilled machine operators to become all-around machinists. However, many companies chose to contract the making of tools and dies to specialty machine shops. In every region, individuals who were initially hired as machine operators were trained internally to handle more complicated tasks and to read blueprints. After the passage of about five years, the employees were described as machinists. A study of machinists broadened into a study of machining because of the deviation of employer definition of all-around machinists from the Occupational Outlook Handbook's definition of an all-around machinist.

This problem of definition had an impact on the study. The original intention was to interview fifty-four firms who employed machinists and which were located outside the Boston Standard Metropolitan Statistical Area where the Bureau of Labor Statistics had surveyed 736 tool and die makers and 851 maintenance machinists in August 1977. The New Bedford LMA produced a study of machine-operators in the textile and apparel industries. Of the remaining potential forty-eight firms, thirty-eight firms employed individuals who at the average wage-maximum wage stage of their career actually were performing tasks of all-around machinists. This latter sample includes 1,400 machinists.

The sample places limitations on the study of machinists. Nevertheless, the differing definitions of machinists is important in that these employers placed job orders for machinists or newspaper want-ads describing the position as machinist. It is not possible to compare the results of the survey of one labor market area to another with total consistency. Interregional comparisons of sources of recruitment and commuting patterns are possible. (Comparison between regions of average wages and maximum wages of machinist is feasible). It is felt that the information will be valuable to planners.

OCCUPATIONAL OUTLOOK HANDBOOK DEFINITION OF ALL-AROUND MACHINIST

(D.O.T. 600,28Q,. 281, and .381)

All-round machinists are skilled metal workers who can perform a wide variety of machining operations. They are able to set up and operate most types of machine tools used to make metal parts for cars, machines and other equipment. Machinists also know the working properties of a variety of metals including steel, cast iron, aluminum, brass, and other metals. This knowledge of metals, plus their ability to work with machine tools, enables machinists to turn a block of metal into an intricate part meeting precise specifications.

Before they begin actually making a machined product, machinists usually consult blueprints or written specifications for the item. Using these, they are able to select tools and materials for the job and plan the cutting and finishing operations. They also make standard shop computations relating to dimensions of work and machining specifications. To be sure their work is accurate, they check it using precision instruments, such as micrometers, which measure to thousandths or even millionths of an inch. After completing machining operations, they may use hand files and scrapers to smooth rough metal edges before assembling the finished parts with wrenches and screwdrivers.

Like production machinists, all-round machinists who work in plant maintenance shops have a broad knowledge of mechanical principles and machining operations. These workers are responsible for repairing parts or making new parts for machinery that has broken down.

SOURCES OF RECRUITMENT

In the Pittsfield area, many companies recruit directly from vocational schools. Companies made efforts to identify promising students in the hope of hiring them upon graduation. In addition, there was a reluctance to hire an unemployed machinist who applied directly with the firm. The Lawrence-Haverhill SMSA had excellent experience in hiring Regional Vocational-Technical High School graduates. The Lowell LMA used a wide variety of recruitment techniques: agencies, newspaper advertising, and internal recruitment. The employers hired vocational school graduates. In addition, they discussed "pirating" among other employers. The most frequent source of actual hires was applicants who responded to newspaper want ads, followed by applicants referred by the Division of Employment Security and CETA. In an SMSA in the Southeastern Region of the State, employers discussed efforts at "pirating" from other firms. Efforts ranged from placing a recruiter in a tavern across the street from a machine shop to going through town residency lists to identify individuals listed as machinists. The employers maintained a close relationship with regional technical schools and identified future employees among students in their junior year. The Fall River LMA exemplified that the residence of employees (commuting patterns) influenced the sources of recruitment. Recruitment from agencies, schools, internal efforts, and direct application was common in this region where the majority of employed machinists worked within five miles of their residence. In this region newspaper ads were not cited as one of the two most frequent sources of hires. The Vocational-Technical Schools played a positive role in recruitment efforts. The Springfield-Chicopee-Holyoke LMA employers provide in-service training of machine operators to develop machinists. In recruitment of machine operators preference was given to direct application, followed by public employment agencies, newspaper advertising, and local trade schools in that order. In the Fitchburg LMA, internal recruitment and direct application were the most frequent sources of new hires. In the Worcester LMA, employers utilized internal recruitment most frequently, and maintained close relationships with vocational-technical schools. Direct applications were infrequently taken and were a rare source of recruitment except in the Fall River LMA, Pittsfield LMA, and the Lawrence-Haverhill SMSA.

The consistent trend was that direct applications as a source of recruitment were more commonly used in smaller labor areas in the state. Newspaper advertisements and the use of public employment agencies as a source of recruitment occurred most frequently in large urbanized areas with greater radius of commuting miles. Internal recruitment through promotions and referrals made by employees was the most frequent source of new hires.

Table I

Source of Recruitment
Percentage of Usage by Firms Surveyed

Source	Percentage of Firms
Internal Recruitment	82%
Advertising	79%
Agencies and Schools	77%
Direct Application	59%

Each individual firm surveyed was requested to indicate its most frequent source of individuals actually hired (versus source of recruitment) and the second most frequent source of individuals hired. The combined most frequent source of hires were agencies and schools (30%) internal recruitment (30%), advertisement (25%), and direct application (15%).

Table II

Most Frequent Source of Hires

Source	Percentage of Firms
Internal Recruitment	39%
Agencies and Schools	22%
Advertising	22%
Direct Application	17%

The most frequent individual source of hires cited was newspaper advertisements (twenty-two per cent), followed by schools (eleven percent).

Table III
Second Most Frequent Sources of Hires

Source	Percentage of Firms
Agencies and Schools	39%
Advertising	29%
Internal Recruitment	18%
Direct Application	14%

The second most frequent individual source of hires was the Division of Employment Security (thirty-two percent).

In conversation with personnel managers, it was learned that there is a seasonal pattern to sources of new hires. In the late Spring, schools are the principal focus of recruitment and source of new hires. In the late Autumn and early Winter, public employment agencies and "pirating" are sources of recruitment and new hires.

Ninety-seven percent of the firms surveyed were multi-mechanism recruiters. Eighty-nine percent of the firms employed external sources of recruitment: agencies (public and schools) and advertisements. Sixty-two percent of the firms utilized both agencies and advertisements.

Research and Development Monograph 59, U.S. Department of Labor, The Public Service and Help Wanted Ads, compared the stock of jobs on hand and the flow of listings during a month in the help wanted column to the job orders placed by employers with a local Employment Service in twelve labor areas nationwide. Significant nationwide findings included:

The employment service (ES) and the want ads have approximately the same volume of listings when viewed from the perspective of inventory, or stock, of jobs available to a job seeker on first encounter with both mechanisms.

Approximately one-third of all employers who list with E.S. are multi-mechanism users --- they also list with the want ads during a four week period.

These multi-mechanism employers generate nearly 40 percent of all the new job listings received in E.S. in a month.

Approximately 91 percent of the employers appearing in the want ads during a month do not list their jobs with E.S. in that period, whereas 67 percent of employers who list with ES do not list their jobs with the want ads.

On the average, employers who use both channels do not call E.S. until six days after their jobs appear in the want ads.

The national study found that machine trade job listings, often involving hard-to-fill, high skill occupations, moved from 10.7 percent of the stock of Employment Service listings to only 5.5 percent of the flow. Nationally, the stock of want ad listings for the machine trade occupations represented 5.9 percent of the total stock; whereas 5.7 percent of the pure flow of job listings in the want-ads was for the machine trade occupations. The rank by percentage share of total pure-flow listings in the machine trades was equivalent for both mediums (seventh out of a possible eleven).

Table IV

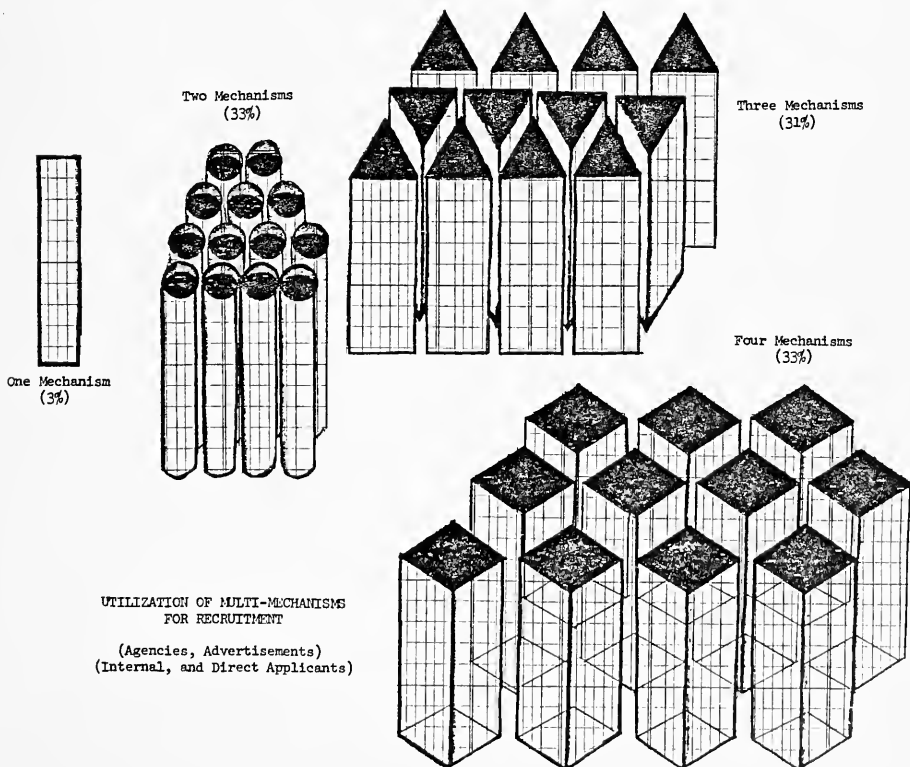
Ranking of First-Digit DOT Occupational Composition of Each Mechanism
(Ranked by Percentage Share of Total)

	United States Employment Service		Massachusetts Employment Service		United States Want Ads	
	Stock \1	Pure Flow \2	Stock \4		Stock \1	Pure Flow \3
Professional, Tech., Mgr.	2	5	1		3	4
Clerical	3	2	2		2	2
Sales	6	6	8		4	3
Service	1	1	3		1	1
Farming, Forest. Fishing	9	9	10		10	10
Processing	10	10	9		11	11
Machine Trade	5	7	7		6	7
Benchwork	8	8	6		9	9
Structural	4	4	5		5	5
Miscellaneous	7	3	4		7	6
Occupation Unknown	11	11	11		8	8

- 1/ June 1974 through May 1975
2/ October 1974 first working day, 4 weeks
3/ September 1974 last Sunday, 4 weeks
4/ October 1977 through March 1978

In Massachusetts, Machine Trade Job listings ranked seventh in the first quarter of calendar 1978. Nationally, mandatory listings comprise twenty-nine percent of the total machine trade jobs listed with the Employment Service. In Massachusetts in the first quarter of calendar 1978, mandatory listings comprised thirty-seven percent of total machine trade jobs listed with the Employment Service. Machining and related work job listings represented six tenths of a percent of the total Employment Service listings. Mandatory listings accounted for forty-six percent of the machining and related work vacancies listed.

It should be noted that the national survey was conducted in late 1974 and early 1975. During this time period, the United States was sliding into the economic recession. The field survey conducted in August and September 1978 suggests that in a recovering economy for a net high demand occupation, the incidence of multi-mechanism recruiting is more frequent than in the national study, particularly the simultaneous utilization of public agencies and newspaper advertisements.



GEOGRAPHICAL RESIDENCE AND COMMUTING PATTERNS

With the exception of the Fall River LMA and the Pittsfield LMA, the majority of machinists resided in a geographical area five miles or more from the facility where they worked. In both Fall River and Pittsfield, the size of the firm did not change the tendency of machinists to live less than five miles from where they worked. In the Lawrence-Haverhill SMSA, firms with more than two hundred employees were more likely to have machinists who resided five miles or more from their place of work than smaller firms.

The higher wages paid in the Boston SMSA attracted machinists who lived within the Lowell LMA and Brockton SMSA. There is interlabor area commuting from the Lowell LMA to the Lawrence-Haverhill SMSA. In addition, the Brockton SMSA attracts machinists who reside in the Fall River LMA.

In most parts of the state, machinists are employed in facilities five miles or more from their home. More than seventy percent of the surveyed firms' employees resided five miles or more from the plant where they worked. Machinists with private transportation who restrict themselves to working in the neighborhood where they reside are diminishing the likelihood of finding employment and the probability of career advancement.

ENTRY REQUIREMENTS FOR MACHINISTS

The importance of educational requirements and/or experience requirements for entry differed from region to region and by source of recruitment. Education was not a critical requirement in firms which hired machine operators as their entry position and later trained the individuals as machinists in the Springfield IMA, Lowell IMA, Worcester IMA, and Pittsfield IMA. Forty-six percent of the firms indicated educational requirements were a minimum entry requirement. The Fall River IMA preferred to hire technical school graduates and train them as machinists. In practice the Lawrence-Haverhill SMSA tended to hire vocational-educational school graduates. Fifty percent of the employers who indicated that there were no minimal educational requirements for entry as machinists, typically hired individuals who had completed vocational or technical schools. A vocational-technical school background with courses in mathematics, blueprint reading, mechanical drawing, and machine shop training was preferred by many employers.

Prior experience in metal machining occupations was an important criteria in the Springfield IMA, Lowell IMA, Brockton SMSA, and the Worcester IMA. In those instances where substantial experience (3-5 years) was required, higher beginning wages were paid.

Mechanical ability, accuracy, concentration, persistence, independence, and physical effort were mentioned as traits desired of potential machinists.

WAGES IN MACHINING

Because many firms hired machine operators as the entry occupation in the company's career ladder to machinists and because many firms defined an individual performing the tasks of machine operator as a machinist, it is difficult to make meaningful comparisons of beginning wages paid. Beginning wages with no experience ranged from a low of \$2.85 an hour to a high of \$6.00 an hour. Beginning wages with experience ranged from a low of \$3.50 an hour to a high of \$7.03 an hour.

Comparisons between Labor Market Areas on hourly average wage and hourly maximum wage tended to reflect interregional wage differences as did jobs for machinists and tool-and-die makers listed with Job Bank in August 31, 1977. At that time, it appeared that the Boston Job Bank and the Worcester Job Bank job orders paid the highest followed by Springfield Job Bank, Lawrence Job Bank, and Taunton Job Bank in that order. Table V_a depicts the median and high weekly wage rates of unfilled job openings. This same trend still exists.

The hourly average wage ranged from \$4.08 an hour to \$8.00 an hour. The middle range earnings were between \$6.00 and \$6.50 an hour. The distribution of hourly average wages paid by firms surveyed follows:

Hourly Wages	Percent of Firms Surveyed
\$4.00 to \$4.99	14
5.00 to 5.99	21
6.00 to 6.99	36
7.00 to 7.99	18
8.00 to 8.99	11

A table comparing the mean hourly average wage rate by labor market area demonstrates the interregional differences.

Table V

Comparison of Mean Hourly Average Wage Rates
By Labor Market Area

	Occupation of Machinists
Pittsfield	\$5.58
Springfield	6.92
Worcester	6.66
Fitchburg	6.00
Lowell	5.75
Lawrence	6.17
Fall River	5.25

In 1976, nationally, machinists employed in Metropolitan areas had estimated hourly earnings of \$6.76. Of the ten areas surveyed in the national study in 1976, Boston ranked ninth. San Francisco-Oakland in 1976 was paying an average hourly wage rate of \$7.82 an hour. In Massachusetts, the earnings of machinists compare favorably with those of other skilled workers.

The hourly maximum wage ranged from \$5.12 an hour to \$8.65 an hour. The distribution of hourly wages paid by firms surveyed follows:

Table Va
Comparison of Weekly Wage Rates Unfilled Job Openings
By Job Bank Area, By Occupation
August 31, 1977

Selected Occupational Group	Boston Metropolitan			Springfield			Worcester			Lawrence			Taunton			
	Low	Medium	High	Low	Medium	High	Low	Medium	High	Low	Medium	High	Low	Medium	High	
Machineist	600.280	120	200	315	120	170	240	120	180	269	92	200	240	92	168	300
Machine Set-Up Operator	600.380	-	-	-	110	152	200	130	140	174	-	-	-	-	-	-
Tool and Die Maker	601.280	150	236	274	120	204	346	120	180	250	-	-	-	-	-	-
Machine Operator	619.885	100	120	200	-	-	-	-	-	-	96	120	140	-	-	-

Hourly Wages	Percent of Firms Surveyed
\$5.00 to \$5.99	10
6.00 to 6.99	42
7.00 to 7.99	32
8.00 to 9.99	16

Companies with fewer than 50 employees or greater than 250 employees tended to pay the highest maximum wages; an average of \$7.45 an hour. Some of the medium sized firms unwittingly serve as training institutions for small machine shops or large corporations.

Table VI

Comparison of Mean Hourly Maximum Wage Rates
By Labor Market Area

	Occupation of Machinists
Pittsfield	\$6.53
Springfield	7.02
Worcester	7.28
Fitchburg	6.79
Lowell	6.99
Lawrence	7.00
Fall River	6.68

Excluding the Boston SMSA, the mean average hourly wage for the State is \$6.17 an hour. The mean maximum hourly wage is \$7.00 an hour for the State excluding the Boston S.M.S.A. In August, 1977, The Bureau of Labor Statistics studied the hourly earnings of tool and die makers in the Greater Boston Area. The mean hourly earnings were \$7.08 an hour, the median hourly earnings were \$6.80 an hour; and the middle range was \$6.48 - \$7.68 an hour. The mean hourly earnings of maintenance machinists was \$6.56 an hour. Maintenance machinists earned median hourly wages of \$6.84 and middle range earnings of \$6.00 - \$6.99 an hour. The Boston SMSA continues to pay the highest hourly wages to a machinist in the State. The Occupational Outlook Handbook, 1978-1979 Edition, indicated that in 1976 average hourly wages for all-around machinists in the Boston Area were \$6.33 an hour. Statewide, entry all-around machinists can anticipate hourly wages of \$4.25-5.70 per hour.

Growth In Machining

In most Labor Market Areas in the State, growth in demand for machinists is apparent. This is consistent with occupational projections of annual demand 1974 - 1985 (Table VII and VIII).

Table VII

Average Annual Number of Job Openings for Machinists
During 1974-1985 Period

Occupation	Employ- ment 1974	Employ- ment 1985	Annual Labor Demand 1974-1985		
			Total Demand	Due to Growth	Due to Separations
Machinists & Apprentices	15,442	15,978	355	49	306
Tool & Diemakers & Apprentices	6,188	6,434	149	22	127

SOURCE: OCCUPATION /INDUSTRY RESEARCH DEPARTMENT

The sample of firms surveyed indicated a modest growth of machinists positions statewide. The Boston SMSA is the leading area of employment for machinists. Experimental machinists are needed in some high technology firms. The growth in positions was most pronounced in the Fitchburg LMA and the Worcester LMA. Demand in Worcester has been so great that firms customarily hire seniors and even juniors for part-time and after-school work.

The number of new hires during the 1976-1978 period was in excess of new positions during the same time period. Replacement hires contributed to a stable number of machinist positions from year to year in many firms. Replacement hires appeared to result predominantly from retirement. In addition, some machinists were attracted to other firms paying higher wages. In the Lawrence-Haverhill SMSA, many employers believed that in the next ten to twenty years there will be a critical shortage of machinists. Many machinists are now middle age or older. The number of individuals eligible to retire will be increasing steadily. The employees expressed considerable concern that there will not be enough younger machinists to replace the retirees. In the Brockton SMSA, most of the firms interviewed had machinists that had been with the firm for 30, even 40 years. A machinist who had 5-6 years experience was described as "new" and an exception to the general age level of machinists. In the Springfield LMA, employers noted that many machinists had been with the company from 15-30 years. By August 1978 firms employing large numbers of machine operators in the Springfield LMA felt that conditions were leveling off in their respective industries and foresaw a period (12 to 18 months) of stabilization in employment with most new hirings for replacement purposes only.

In the Worcester LMA and the Pittsfield LMA, some employers indicated that they had invested in computerized numerically controlled tools and numerical tape machines (computerized lathes). At one firm, a numerical machine was able to produce in 6 months what normally would take three machines (six men) to produce in one year. It was believed that increased production in one component of an unfinished product would likely produce more job openings in other facets of production and make the company more competitive in the marketing of its product. The impact of numerically controlled machines would be determined by the size of the firm and receptivity of unions. Because of the high cost of the numerically controlled machines, it would be economically unfeasible for smaller firms to totally turn to such equipment. Larger firms with sufficient capital to invest in the machines will do so in the future provided that there is not union resistance to increased automation. It is likely that future machinists will need orientation to the basics of operations management and computer programming. Some companies require experienced machinists to take additional courses in mathematics and electronics so they can service and operate numerically controlled machine tools.

Table VIII
Average Annual Number of Job Openings, For Machinists & Apprentices
By Labor Market Area, 1974-1985

Labor Market Area	Total	Due to Growth	Due to Separation
Boston	158	9	149
Brockton	84	-4	88
Fall River	66	22	44
Fitchburg-Leominster	85	19	66
Lawrence-Haverhill	133	-43	176
Lowell	123	13	110
New Bedford	77	11	66
Worcester	35	5	30
Springfield-Chicopee-Holyoke	46	8	38
Pittsfield	63	-14	77

SOURCE: Occupation/Industry Research Department
MASSACHUSETTS DIVISION OF EMPLOYMENT SECURITY

Most employers were enthusiastic about the occupation of machinist and optimistic concerning employment opportunities in the future. They were concerned about youth not preparing themselves to become machinists both because of future replacement needs and because they felt being a machinist was a fulfilling career. Many employers felt that vocational-technical schools were providing excellent basic training both in terms of technical skills and work attitudes.

The employers emphasized that all-around machinists have numerous opportunities for advancement. Many become supervisors. Some take additional training and become tool-and-die or instrument makers. With continuing education, skilled machinists may advance into other technical jobs in machine programming and tooling.

Table IX

Occupational Profile of Machinists
in Manufacturing Industries in Massachusetts

Reference Date: April, May, and June 1974

Sample: 3076 firms with total employment of 362,339

SIC Code	Industry	Number of Machinists	Percent Employment In Industry
203	Canned, Cured, and Frozen Foods	10	0.24
22	Textile Mill Products	110	0.36
222	Broadwoven Fabric Mill	20	0.71
224	Narrow Fabrics & Other Small wares Mill	50	3.91
226	Textile Finishing Except Wool	20	0.31
228	Yarn and Thread Mills	10	0.43
229	Miscellaneous Textile Goods	30	0.45
23	Apparel and Other Textile Products	50	0.11
239	Miscellaneous Fabricated Textile Products	30	0.35
25	Furniture and Fixtures	10	0.10
251	Household Furniture	10	0.12
26	Paper and Allied Products	240	0.72
262	Paper Mills, Except Building Paper Mills	40	0.50
264	Miscellaneous Converted Paper Products	120	0.83
265	Paperboard Container and Boxes	50	0.53
27	Printing and Publishing	90	0.21
271	Newspapers, Publishing and Printing	20	0.15
275	Commercial Printing	20	0.17
278	Blankbooks and Bookbinding	30	0.65
279	Services for the Printing Trade	10	0.74
28	Chemicals and Allied Products	150	0.78
282	Plastic Materials and Synthetics	50	0.68
284	Soaps, Cleaners, and Toilet Goods	30	0.86
30	Rubber & Miscellaneous Plastics	350	0.98
302	Rubber Footwear	20	0.63
307	Miscellaneous Plastic Products	270	1.31

Table IX (continued)

Occupational Profile of Machinists
in Manufacturing Industries in MassachusettsReference Date: April, May, and June 1974
Sample: 3076 firms with total employment of 362,339
(Continued)

SIC Code	Industry	Number of Machinists	Percent Employment In Industry
31	Leather and Leather Products	90	0.35
313	Footwear Cut Stock	20	0.61
32	Stone, Clay, Glass Products	110	0.81
329	Miscellaneous Nonmetallic Mineral Products	80	0.99
34	Fabricated Metal Products	590	1.19
342	Cutlery, Handtools and Hardware	190	1.23
344	Fabricated Structural Metal Products	90	0.98
345	Screw Machine Products, Bolts etc.	130	2.61
346	Metal Stampings	30	0.75
348	Miscellaneous Fabricated Wire Products	50	2.53
349	Miscellaneous Fabricated Metal Products	40	0.54
35	Machinery, Except Electrical	2,470	3.11
354	Metal Working Machinery	660	4.14
355	Special Industry Machinery	510	2.99
356	General Industry Machinery	90	1.03
359	Miscellaneous Machinery, Except Electrical	770	11.61
362	Electrical Industrial Apparatus	30	1.15
364	Electric Lighting and Wiring Equipment	80	0.85
366	Communication Equipment	190	0.71
367	Electronic Equipment and Accessories	620	1.74
373	Ship and Boat Building	60	2.08
38	Instruments & Related Products	840	2.01
381	Engineering and Scientific Instruments	60	2.17
382	Mechanical Measuring and Control Devices	450	4.50
383	Optical Instruments and Lenses	120	3.08

Table IX (continued)

Occupational Profile of Machinists
in Manufacturing Industries in Massachusetts

Reference Date: April, May, and June 1974
Sample: 3076 firms with total employment of 362,339
(Continued)

SIC Code	Industry	Number of Machinists	Percent Employment In Industry
385	Ophthalmic Goods	50	0.75
386	Photographic Equipment and Supplies	140	1.10
391	Jewelry, Silverware, and Plated Ware	40	0.49
396	Costume Jewelry and Notions	220	6.32

Source: An Occupational Profile of Manufacturing Industries in Massachusetts
1974 Report Number 4.

Occupation/Industry Research Department April 1, 1976.

Machinists: Sources of Supply in Massachusetts

This section briefly describes the primary sources of supply which exists for machinists in Massachusetts. These include vocational schools, the WIN program, apprentice training, CETA, employment service applicants, and the insured unemployed.

Vocational School Survey

Twenty-two vocational educational schools were surveyed across the state representing all major labor market areas excluding the Boston SMSA. School representatives were asked to address a variety of questions, which appear in Table X. The highlights of the findings are outlined below:

- (1) The total number of all graduates among the surveyed schools except one, the Springfield Skills Center, will decline very slightly over the next two years. The skills center is planning to train, pending funding, 256 machine operators in 1979 and 304 in 1980.

Graduates

	Vocational		
Year	Schools	Skills Center	Total
1978	464+	186=	650
1979	438+	256=	694
1980	448+	304=	752
Percent Change 78/80	-3%	63%	+16%

- (2) A high percentage of graduates remain in the machinist trade, according to follow-up studies by the schools.

- (3) A high percentage of graduates remain working within their labor market area. Mobility outside the Labor Market Area is limited.
- (4) Slightly more than half of the responding schools were equipped or funded to train more students. The remaining were at capacity or unable to do so for a variety of reasons (funding, space, etc.)
- (5) Many students work in the skills they are studying between their junior and senior year, or participate in cooperative work or part-time employment. This contributes significantly to the large numbers who find employment directly out of high school or shortly thereafter.

For interregional differences, reference should be made to the appropriate labor area supply and demand reviews. Details on programs and curricula are available for the following labor market areas: Brockton, Fall River, Fitchburg-Leominster, Lawrence-Haverhill, Lowell, New Bedford, Pittsfield, Springfield-Chicopee-Holyoke, and Worcester.

Table X
Occupational Supply Source Survey
Machinist

	Brockton LMA		Pittsfield LMA		Fall River		Law.-Haverhill LMA		Lowell LMA		Worcester LMA	
	S. E. Reg. Voc. T.	Brockton High Sch.	Taconic Voc.	McCann	Dinan	O. L. RVTIES	Rashoba	Shawsheen T.	G. Law. Reg. T.	Worc.	Black-stone	Bay Path
Total Graduates in June 1978	19	7	26	10	43	24	24	23	NA	34	87	80
Estimated Graduates in June 1979	15	7	23	8	43	NA	26	23	NA	35	75	80
Estimated Graduates in June 1980	15	7	21	4	43	NA	26	23	NA	36	75	80
Estimate of Number or Percent of Graduates Who Remain in Their Trade	50-75%	75%	70%	80-85%	74%	85%	92%	Approx. 90%	85%	80%	46%	Ap. 80%
Estimate of Number or Percent of Grads. Who Remain in IFA	NA	100%	70%	75%	70%	90%	100%	Approx. 90%	85%	50%	80%	Ap. 80%
Funded-Equipped to Train More Students	Yes	No	No	No	Yes	No	Yes	-	Yes	NA	No	Yes
Percent Who Obtain Summer Employment Between Junior-Senior Year	NA	50-60%	25-30%	40%	15%	NA	NA	25 %	High	60%	20%	NA
Percent Who Participate in Cooperative Work or Part-time Employment in the Skill They Are Studying	NA	50%	50%	20%	60%	NA	100%	25%	100%	40%	20%	NA

Table X (continued)
Occupational Supply Source Survey
Mechanist

	Fitch. - Leo.		Springfield-Chicopee				Pitts- field	New Bedford	
	Mont. Reg. Voc.	Leo. - Trade	Hampden	Roger Putnam	Westfield	Chicopee C.		Apponequet	Old Colony
Total Graduates in June 1978	9	14	186	21	17	11	10	5	8
Estimated Graduates in June 1979	NA	15	256	20	15	8	14	3	9
Estimated Graduates in June 1980	NA	NA	304	36	17	28	11	4	11
Estimate of Number or Percent of Graduates Who Remain in Their Trade	90%	NA	95%	80%	84%	95%	60%	60%	45%
Estimate of Number or Percent of Grads. Who Remain in LHA	NA	NA	90%	NA	100%	90%	70%	20%	62%
Funded-Equipped to Train More Students	NA	NA	Yes	No	No	yes	No	Yes	NA
Percent Who Obtain Summer Employment Between Junior Senior Year	NA	NA	NA	NA	50%	75%	100%	100%	0
Percent Who Participate in Cooperative Work or Part- time Employment in the Skill They are Studying	NA	50%	NA	80%	80%	95%	100%	66%	50%

TABLE XI
State Funded Programs in Machine Shops
By Labor Market Area

Labor Market Area	Graduates		School	City or Town
	Class of 1978			
Boston SMSA	10	Arlington Senior High School	Arlington	
	11	Claude H. Patten Trade High School	Beverly	
	10	Blue Hill Regional Vocation Tech. High Sch.	Canton	
	9	Boston Trade High School	Boston	
	32	Boston Industrial Cooperative Programs	Boston	
	6	Everett Vocational High School	Everett	
	36	Lynn Vocational Technical Institute	Lynn	
	5	Medford Vocational Technical High School	Medford	
	12	Minutemen Regional Vocational Tech. High Sch.	Lexington	
	5	Newton-North Sch.-Tech. Voc. Dept.	Newton	
	2	North Shore Regional Voc. School District	Beverly	
	20	Northeast Met. Regional Voc. School District	Wakefield	
	9	Peabody Voc. High School	Peabody	
	9	Quincy Vocational - Technical School	Quincy	
	2	Salem Vocational High School	Salem	
	5	Somerville Technical Trade High School	Somerville	
Brockton	13	South Middlesex Regional Voc. Tech. Sch. Dist.		
	9	South Shore Vocational - Tech. High School		
	-	Tri-County Reg. Voc. Tech. School District		
	11	Waltham Vocational High School	Hanover	
	19	Southeastern Reg. Voc. Tech. School	Franklin	
	7	Brockton High School	Waltham	
	43	Diman Regional Voc. Tech. High School	South Easton	
	14	Leominster Trade High School	Brockton	
	9	Mantachusett Regional Voc. Tech. Sch. Div.	Fall River	
	10	Gloucester Vocational School	Leominster	
		Fitchburg		
Gloucester		Gloucester		

Table XI(Continued Page)
State Funded Programs in Machine Shops
By Labor Market Area

Labor Market Area	Graduates Class of 1978	School	City or Town
Lawrence-Haverhill	24	Greater Lawrence Regional Voc. T. H. Sch.	Andover
	18	Whittier Regional Vocational Tech. H. Sch.	Haverhill
Lowell	23	Greater Lowell Regional Voc. Tech. H. Sch.	Tyngsborough
	24	Nashoba Valley Regional Voc. Tech. H. Sch.	Westford
	23	Shawshen Valley Regional Voc. High School	Billerica
New Bedford	5	Apponequet Regional Vocational High School	Lakeville
	25	Greater New Bedford Reg. Voc. Tech. H. Sch.	New Bedford
	8	Old Colony Regional Voc. Tech. High School	Rochester
Pittsfield	10	Franklin County Technical School	Turner Falls
	26	Taonic Vocational High School	Pittsfield
	10	Charles McCann Regional Vocational Tech.	Williamstown
Providence - Pawtucket R.I. SMSA Massachusetts Portion	5	Attleboro Vocational Tech. High School	Attleboro
	6	Dighton Rehoboth Regional Vocation H. Sch.	Rehoboth
Springfield	11	Chicopee Comprehensive High School	
	7	William J. Dean Voc. Tech. High School	
	13	Pathfinder Regional Voc. Tech. High School	
	21	Putnam Vocational Technical High School	
	11	Smith's Agricultural Vocational H. Sch.	
	17	Westfield Vocational High School	
	186	(Hampden District Regional Skill Center)	
Taunton	6	Bristol-Plymouth Regional Voc. Tech. Sch.	Springfield
Worcester	80	Bay Path Regional Voc. High School	Northampton
	34	Worcester Voc. Tech. High School	Westfield
	87	Blackstone Voc. Regional Tech. H. School	Taunton
			Charlton
			Worcester
			Upton

Source:1/ Division of Occupational Education
State Department of Education
Commonwealth of Massachusetts

2/ Information on Graduates was obtained through a telephone survey.

Work Incentive Program (WIN)

Win had 68 ongoing on-the-job training contracts in metal trades as of November 1, 1978. These contracts were for machinists, metal machinists, and machine operators.

WIN-The Work Incentive Program - helps individuals who receive Aid to Families with Dependent Children (AFDC) move from welfare to economic independence. OJT is on-the-job training given by an employer to a WIN recipient. Under WIN/OJT, the employer can be reimbursed for the costs of training new employees from the WIN Program and is eligible for Federal tax incentives.

Apprentice Training

The Apprentice Training Division of the Department of Labor and Industries approves all formal apprentice programs and certifies standard of apprenticeship in Massachusetts. It is charged with developing and serving all programs and handling complaints registered by participants in or applicants for approved programs.

October Status of Apprentices

	<u>Machinist</u>	<u>Tool & Die</u>
Firms Involved	303	NA
Individuals	516	165
White	475	159
Minority Group	41	6
Male	497	164
Female	19	1
Veterans		
Viet-Nam	218	59
Other	298	NA

Source: Division of Apprentice Training

CETA

The Massachusetts Balance of State CETA has developed a \$5 million STIP (Skills Training Improvement Program) program to train and place 403 individuals including 36 machinists. Other training programs are made available through the CETA prime sponsors. In fiscal year 1979, the Boston prime sponsor will offer machine tool and marine machinist training program at the E.D.I.C. and O.I.C. facilities. The Gardner CETA consortium has also been conducting a machine occupation classroom training program under Title I. The Springfield CETA has a machine operator training program.

ESARS

The State's ESARS (Employment Services Automated Reporting System) can be used as another indicator of the availability of certain machine occupations. ESARS tables exist for both the state and the local office levels. The table of significance in ESARS is Table 96. This table lists the occupations of all registered applicants with the Employment Service. For example as shown on the accompanying page Massachusetts' March 31, 1978 ESARS Table 96 lists 1,035 instrument makers (600.280) and 147 tool and die makers (601.281) registered with D.E.S.

MACHINE TRADES OCCUPATIONS

- 60 Metal machining occupations
- 600 Machinists and related occupations
- 601 Toolmakers and related occupations
- 602 Gear machining occupations
- 603 Abrading occupations
- 604 Turning occupations
- 605 Milling, shaping, and planing occupations
- 606 Boring occupations
- 607 Sawing occupations
- 609 Metal machining occupations, n.e.c.
- 61 Metalworking occupations, n.e.c.
- 610 Hammer forging occupations
- 611 Press forging occupations
- 612 Forging occupations, n.e.c.
- 613 Sheet and bar rolling occupations
- 614 Extruding and drawing occupations
- 615 Punching and shearing occupations
- 616 Fabricating machine occupations
- 617 Forming occupations, n.e.c.
- 619 Miscellaneous metalworking occupations, n.e.c.
- 62/63 Mechanics and machinery repairers
- 620 Motorized vehicle and engineering equipment mechanics and repairers
- 621 Aircraft mechanics and repairers
- 622 Rail equipment mechanics and repairers
- 623 Marine mechanics and repairers
- 624 Farm mechanics and repairers
- 625 Engine, power transmission, and related mechanics
- 626 Metalworking machinery mechanics
- 627 Printing and publishing mechanics and repairers
- 628 Textile machinery and equipment mechanics and repairers
- 629 Special industry machinery mechanics
- 630 General industry mechanics and repairers
- 631 Powerplant mechanics and repairers
- 632 Ordnance and accessories mechanics and repairers
- 633 Business and commercial machine repairers
- 637 Utilities service mechanics and repairers
- 638 Miscellaneous occupations in machine installation and repair
- 639 Mechanics and machinery repairers, n.e.c.
- 64 Paperworking occupations
- 640 Paper cutting, winding, and related occupations
- 641 Folding, creasing, scoring, and gluing occupations
- 649 Paperworking occupations, n.e.c.
- 65 Printing occupations
- 650 Typesetters and composers
- 651 Printing press occupations
- 652 Printing machine occupations
- 653 Bookbinding-machine operators and related occupations
- 654 Typecasters and related occupations
- 659 Printing occupations, n.e.c.
- 66 Wood machining occupations
- 660 Cabinetmakers
- 661 Patternmakers
- 662 Sanding occupations
- 663 Shearing and shaving occupations
- 664 Turning occupations
- 665 Milling and planing occupations
- 666 Boring occupations
- 667 Sawing occupations
- 669 Wood machining occupations, n.e.c.
- 67 Occupations in machining stone, clay, glass, and related materials
- 670 Stonecutters and related occupations
- 673 Abrading occupations
- 674 Turning occupations
- 675 Planing and shaping occupations, n.e.c.
- 676 Boring and punching occupations
- 677 Chipping, cutting, sawing, and related occupations
- 679 Occupations in machining stone, clay, glass, and related materials, n.e.c.
- 68 Textile occupations
- 680 Carding, combing, drawing, and related occupations
- 681 Twisting, beaming, warping, and related occupations
- 682 Spinning occupations
- 683 Weavers and related occupations
- 684 Hosiery knitting occupations
- 685 Knitting occupations, except hosiery
- 686 Punching, cutting, forming, and related occupations
- 687 Tufting occupations
- 689 Textile occupations, n.e.c.
- 69 Machine trades occupations, n.e.c.
- 690 Plastics, synthetics, rubber, and leather working occupations
- 691 Occupations in fabrication of insulated wire and cable
- 692 Occupations in fabrication of products from assorted materials
- 693 Modelmakers, patternmakers, and related occupations
- 694 Occupations in fabrication of ordnance, ammunition, and related products, n.e.c.
- 699 Miscellaneous machine trades occupations, n.e.c.

Table XII

TABLE APPLICANTS AND NONAGRICULTURAL JOB OPENINGS BY OCCUPATION

STATE MASSACHUSETTS

TABLE

ITEM NO.	OCCUPATIONAL CODE	ACTIVE FILE										NONAGRICULTURAL OPENINGS										
		TOTAL REGIS-TERED APPLI-CABLE	TOTAL FEMALE	VETERAN	AGE GROUPS	MINOR-ITY	UNDER 22	45 AND OLDER	I	II	O	F	E	D	C	B	A	K	L	M	N	O
96	575	84	53	7	12	11	25	11	5	6	24	7	2	7	2	20	4	27	2	7	4	3
96	579	137	100	11	20	25	6	0	10	10	44	6	1	1	1	20	6	27	2	8	6	5
96	580	30	29	6	6	2	2	0	4	10	6	1	1	1	1	8	2	9	1	8	2	2
96	581	22	13	2	2	2	2	4	2	6	6	12	1	1	1	1	1	12	0	11	1	1
96	582	177	112	9	33	8	4	43	18	32	148	124	106	44	42	148	44	148	106	44	42	42
96	583	63	46	20	10	4	12	14	10	17	29	16	14	9	14	17	14	29	16	14	9	14
96	584	64	44	15	10	4	14	14	8	20	36	19	21	21	20	36	21	36	19	21	21	20
96	585	74	39	11	5	6	6	8	7	15	13	2	8	7	7	15	8	13	2	8	7	7
96	586	20	14	2	5	1	1	2	3	10	19	7	10	1	1	10	1	19	7	10	1	1
96	587	13	8	1	3	1	1	2	1	2	2	0	0	0	0	2	0	2	0	0	0	0
96	589	471	288	105	53	61	69	69	66	144	166	13	98	40	25	144	166	13	98	40	25	25
96	589.085	61	37	16	6	6	16	8	20	14	2	6	4	3	3	16	2	20	14	2	6	4
96	590	59	40	12	9	11	6	7	21	31	6	24	13	9	9	24	13	31	6	24	13	9
96	599	153	86	18	21	15	24	17	33	44	18	26	18	18	18	33	44	18	26	18	18	18
96	600	1209	709	32	278	103	190	79	262	578	265	257	307	243	243	265	257	578	265	257	307	243
96	600.200	600	200	19	231	83	149	85	185	449	211	252	256	204	204	449	211	449	252	256	256	204
96	600.300	1035	637	19	28	18	23	20	44	105	45	69	71	71	71	105	45	105	69	71	71	71
96	600.400	104	111	9	28	18	23	20	44	105	45	69	71	71	71	105	45	105	69	71	71	71
96	601	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
96	601.200	221	131	5	66	11	60	7	37	39	109	61	47	106	90	61	47	109	61	47	106	90
96	602	147	89	1	40	7	37	3	23	38	81	49	38	76	71	49	38	81	49	38	76	71
96	602.005	13	10	6	2	1	2	1	3	3	7	7	2	7	7	3	7	7	2	7	2	7
96	603	5	5	4	0	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1
96	603.200	249	155	11	48	16	36	31	74	97	32	67	33	77	46	97	32	97	67	33	77	46
96	603.702	63	37	5	12	1	11	9	16	16	32	25	11	19	19	16	32	25	11	27	19	19
96	603.802	102	65	4	17	6	8	11	32	45	32	45	11	24	24	32	45	32	45	11	24	24
96	603.805	65	39	2	14	7	12	10	22	32	45	32	15	3	3	22	45	32	15	3	3	3
96	603.806	65	39	2	14	7	12	10	22	32	45	32	15	3	3	22	45	32	15	3	3	3
96	604	1	1	0	0	1	1	0	1	1	1	0	0	0	0	1	1	1	0	0	0	0
96	604.100	303	181	12	51	23	33	33	31	60	168	96	66	148	118	60	168	96	66	66	148	118
96	604.200	30	18	0	7	2	2	2	5	27	17	17	8	20	18	5	27	17	17	8	20	18
96	604.300	97	67	1	22	5	9	9	33	60	38	13	13	52	45	33	60	38	13	52	45	45
96	604.885	122	75	7	17	14	16	15	26	66	28	37	40	30	30	26	66	28	37	40	30	30
96	604.886	4	1	0	0	0	0	0	1	1	1	0	0	0	0	1	1	1	0	0	0	0
96	605	226	143	19	39	16	34	23	66	106	74	30	68	48	48	66	106	74	30	68	48	48
96	605.782	68	58	7	16	6	8	8	21	44	33	10	21	29	29	44	33	44	33	10	21	29
96	605.885	109	65	10	18	6	19	14	25	44	28	17	27	27	27	25	44	28	17	27	27	27
96	606	285	161	38	41	25	26	41	73	115	75	49	74	52	52	73	115	75	49	74	52	52
96	606.782	202	133	26	26	20	21	30	54	66	40	30	47	31	31	66	40	66	40	30	47	31
96	606.885	17	8	3	1	2	0	2	3	3	3	1	2	2	2	3	3	3	1	2	2	2
96	607	31	19	0	9	3	4	4	4	9	220	6	6	215	215	4	220	6	6	6	215	215
96	609	1370	890	270	167	131	152	152	245	397	410	209	267	155	155	152	410	209	267	207	155	155
96	609.300	16	10	0	4	0	2	1	4	17	9	6	14	6	6	17	9	17	9	6	14	6
96	609.884	66	44	16	7	9	10	12	24	16	17	9	12	5	5	24	16	17	9	12	5	5
96	609.885	927	602	145	97	92	73	208	286	286	255	109	190	84	84	286	255	109	190	84	84	84
96	610	35	25	2	8	3	6	6	1	14	12	9	6	1	1	25	12	25	9	6	1	1

MASSACHUSETTS 25
FOR PERIOD ENDING 03/31/70
REPORT NO HAS-62

MASSACHUSETTS 26
REPORT NO MA5-62

QUARTERLY YEAR TO DATE
FOR PERIOD ENDING 03/31/70

Table XII (continued)

TABLE APPLICANTS AND NONAGRICULTURAL JOB OPENINGS BY OCCUPATION		03/31/78 MASSACHUSETTS STATE MASSACHUSETTS		TABLE																																																																																																																																																																																																																																																																																																																																																																					
ITEM NO.	OCCUPATIONAL CODE	ACTIVE FILE										NONAGRICULTURAL OPENINGS																																																																																																																																																																																																																																																																																																																																																													
		TOTAL REGIS- TERED APPS. AVAILABLE	TOTAL FEMALE	VETERAN	AGE GROUPS UNDER 22	45 AND OLDER	MINOR- ITY	ECONOM- ICALLY DISAD- VANT- AGED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL 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ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED	TOTAL RECEIV- ED

QUARTERLY YEAR TO DATE
FOR PERIOD ENDING 03/31/78

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Table XII (continued)

APPLICANTS AND NONAGRICULTURAL JOB OPENINGS BY OCCUPATION

ITEM NO.	OCCUPATIONAL CODE	TOTAL REGIS-TERED APPS AVAILABLE	TOTAL FEMALE	VETERAN	ACTIVE FILE	AGE GROUPS	MINOR-ITY	ECONOM-ICALLY DISAD-VANT-AGED	J	K	L	M	N	O
						0	H	I						
96	604	9	7	1	3	0	2	1	2	1	0	1	1	0
96	605	65	46	29	9	8	10	16	24	58	36	20	35	35
96	605885	72	46	29	9	8	10	11	17	47	35	20	33	33
96	606	28	18	5	1	4	1	3	7	7	5	4	2	2
96	609	300	196	127	19	22	64	28	79	63	18	32	14	14
96	609085	135	88	57	5	11	28	14	35	19	9	14	3	7
96	609086	22	8	5	0	1	3	1	5	8	0	3	7	7
96	690	1235	814	517	71	89	267	153	287	351	119	158	164	164
96	690130	1	1	0	1	0	1	1	0	0	0	0	0	0
96	690762	876	391	320	14	30	144	71	137	155	27	80	113	113
96	690885	608	393	184	49	57	106	74	144	193	91	76	50	50
96	691	167	117	40	12	12	18	24	31	61	44	43	6	6
96	692	160	99	52	14	14	21	17	42	37	31	34	14	14
96	693	18	8	1	3	3	3	3	4	0	0	0	0	0
96	694	3	2	0	2	0	0	0	1	0	0	0	0	0
96	699	412	277	73	63	50	73	54	106	96	37	61	45	45
96	700	229	155	86	18	33	30	12	81	175	48	75	99	99
96	700281	53	36	12	9	8	2	3	15	10	2	8	3	3
96	700884	56	35	31	0	0	9	5	23	42	15	26	19	19
96	701	94	63	25	18	10	14	5	13	28	23	5	11	11
96	703	5	2	1	1	0	1	0	1	2	0	0	0	0
96	704	51	34	14	5	5	9	4	9	17	6	5	12	12
96	705	312	201	19	44	38	44	46	81	150	51	81	51	51
96	705084	265	165	14	37	31	37	38	62	135	50	69	49	49
96	706	1396	930	689	55	157	163	194	468	440	247	269	183	183
96	706884	935	618	473	29	104	103	123	318	301	154	179	130	130
96	706887	418	286	203	20	49	56	63	140	132	89	88	51	51
96	709	106	70	29	14	12	14	8	35	36	8	11	10	10
96	710	181	120	42	35	13	24	16	46	67	47	17	51	51
96	711	143	95	60	8	15	17	14	39	54	45	49	8	8
96	712	129	80	26	25	10	11	12	25	17	3	10	12	12
96	713	121	89	57	11	15	17	17	33	36	29	28	6	6
96	714	79	54	31	7	8	8	21	24	52	24	44	8	8
96	715	65	45	28	7	2	13	6	15	31	11	19	10	10
96	715381	8	6	4	1	0	1	1	3	20	6	15	3	3
96	716	6	3	1	2	0	2	1	2	5	5	0	5	5
96	719	18	15	6	2	3	2	4	10	7	7	3	4	4
96	720	204	122	15	59	13	28	9	51	69	18	27	20	20
96	720281	174	108	6	56	13	21	7	45	38	3	17	15	15
96	721	63	35	9	11	3	10	1	10	18	2	9	11	11
96	721281-022	0	0	0	0	0	0	0	0	0	0	0	0	0
96	721884	14	9	6	1	1	3	1	3	10	1	5	5	5
96	722	87	61	44	4	9	15	8	29	38	29	14	16	16
96	723	457	319	216	32	29	65	58	174	78	43	40	48	48

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Occupational Characteristics of the Insured Unemployed

Another listing of the available supply of machine occupations is the Divisions's report, Occupational Characteristics of the Insured Unemployed. The January-June report indicates that there were 466 individuals receiving unemployment insurance at the 3 digit DOT code level for machinery and related work at the first of the year. This figure dropped approximately 32 percent by June to 316. The characteristics report like ESARS is also available at the state and the local office level.

UNIONS

Many machinists are members of unions including the International Association of Machinists and Aerospace Workers; The International Union, United Automobile, Aerospace and Agricultural Implement Workers of America; the International Union of Electrical, Radio and Machine Workers; The International Brotherhood of Electrical Workers; and The United Steelworkers of America.

The Directory of Labor Organizations 1978 published by the Massachusetts Department of Labor and Industries, consists of four divisions, as follows:

- I. National and International Organizations
- II. Delegate Organization
- III. Local Labor Unions (by municipality)
- IV. Statistics of Labor Organizations

In 1978, there were 226 local unions in Massachusetts representing 87,577 individuals affiliated with metal and machinery trades.

TABLE XIII

Occupational Group Code and Title	JAN.	FEB.	MAR.	APR.	MAY	JUNE
57 STONE, CLAY, GLASS, & RELATED PRODUCTS	217	267	64	40	102	
570 Crushing, grinding, & mixing	62		32			
571 Separating	31	38			34	
572 Melting					34	
573 Baking, drying, & heat treating						
574 Impregnating, coating, & glazing	62	76			34	
575 Forming	62	153	32	40		
579 Processing, nonmetallic minerals & related products, n.e.c.	248	458	319	321	171	349
58 LEATHER, TEXTILES, & RELATED PRODUCTS						
580 Shaping, blocking, stretching, & tanning	62	38	32	40		95
581 Separating, filtering, & drying			32	40	34	32
582 Washing, steaming, & saturating		38	95			
583 Ironing, pressing, glazing, staking, calendering, & embossing	31	38	32	40	34	32
584 Mercerizing, coating, & laminating		115	64	80	34	
585 Singeing, cutting, shearing, shaving, & napping	155	229	64	121	69	190
586 Felting and fulling	62	153	64		103	32
587 Brushing and shrinking						
589 Processing, leather & textiles, n.e.c.						
59 PROCESSING OCCUPATIONS, N.E.C.						
590 Processing, assorted materials	62	38	64		103	32
599 Miscellaneous processing, n.e.c.	6,392	8,360	6,550	5,339	5,227	4,492
MACHINE TRADES	1,273	2,253	1,811	1,085	1,208	917
60 METAL MACHINING						
600 Machining and related work	466	1,069	667	322	382	316
601 Toolmaking and related work	62	38	95		69	126
602 Gear machining						
603 Abrading	31	115	64	80	69	32
604 Turning		115	95		103	

TABLE XIII (continued)

Occupational Group Code and Title	JAN.	FEB.	MAR.	APR.	MAY	JUNE
605 Milling and planing			32			
606 Boring			32	40	34	
607 Sawing						
609 Metal machining, n.e.c.	714	916	826	643	551	443
61 METALWORKING OCCUPATIONS, N.E.C.	1,304	1,488	922	884	652	854
610 Hammer forging		76	32			63
611 Press forging					34	95
612 Forging, n.e.c.	62					
613 Sheet and bar rolling				40	34	
614 Extruding and drawing		38	64		103	95
615 Punching and shearing	31	76	127	121		32
616 Fabricating machine work	559	878	222	241	172	411
617 Metal forming, n.e.c.	62		64	40	34	32
619 Miscellaneous metalworking, n.e.c.	590	420	413	442	275	126
62, 63 MECHANICS & MACHINERY REPAIRMEN	1,675	1,832	1,526	1,324	1,616	1,297
620 Motorized vehicle & engineering equip. rep.						
621 Aircraft repairing	869	1,107	794	482	895	822
622 Rail equipment repairing	62	38	95	80	103	32
623 Marine equipment repairing						
624 Farm machinery repairing	93	38	32		69	
625 Engine, power transmission, & rel. equip. rep.	31					63
626 Metalworking machinery repairing	31	38	32	80	69	
627 Printing & publishing machinery repairing	93	38		40		
628 Textile machinery & equipment repairing			64	80	34	
629 Special industry machinery repairing			32	40	69	63
630 General industry machinery repairing	31	38				32
631 Powerplant machinery repairing		76		40	34	
632 Ordnance & accessory repairing	31					
633 Business & commercial machine repairing		38			34	
637 Utility equipment repairing	31	153	127	80	34	63
638 Misc. machine installation & repairing	372	115	286	362	172	190
639 Mechanical repairing, n.e.c.	31	115	64	40	69	32

OCCUPATIONS OF THE INSURED UNEMPLOYED
STATEWIDE

MAY-JUNE 1978

		ALL AGES NUMBER	PER.	UNDER 45 YRS.	OVER 45 YRS.	NOT AVAIL
TOTAL		72757	100.0	44218	28539	362
MACHINING & RELATED	600	353	.5	203	150	-
TOOLMAKING & RELATED	601	99	.1	34	65	-
GEAR MACHINING	602	-	-	-	-	-
ABRADING	603	70	.1	56	14	-
TURNING	604	46	.1	36	10	-
MILLING & PLANING	605	65	.1	47	18	-
BORING	606	54	.1	31	23	-
SAWING	607	23	-	18	5	-
METAL MACHINING NEC	609	624	.9	404	219	-
HAMMER FORGING	610	126	.2	107	19	-
PRESS FORGING	611	10	-	7	3	-
FORGING NEC	612	9	-	-	9	-
SHEET & BAR ROLLING	613	10	-	-	10	-
EXTRUDING & DRAWING	614	21	-	17	4	-
PUNCHING & SHEARING	615	91	.1	60	30	4
FABRICATING MACHINE	616	383	.5	258	125	4
METAL FORMING NEC	617	88	.1	76	12	-
MISC METALWORKING	619	347	.5	234	113	-
MOTORIZED VEHICLE&ENG.	620	817	1.1	616	201	8
AIRCRAFT REPAIRING	621	69	.1	62	7	-
RAIL EQUIP REPAIRING	622	7	-	7	-	-
MARINE EQUIP REPAIR	623	18	-	15	3	-
FARM MACHINERY REPAIR	624	-	-	-	-	-
ENGINE, POWER TRANSM	625	32	-	29	3	-
METALWORKING MACHINE	626	15	-	4	11	-
PRINT&PUB MACHINERY	627	5	-	5	-	-
TEXTILE MACH&EQUIP	628	3	-	-	3	-
SPEC INDUSTRY MACH	629	10	-	7	3	-
CARD, COMB, DRAW, REL	680	31	-	24	7	-
TRIST, BEAM, WRAP, REL	681	26	-	17	9	2
DPINNINH	682	-	-	-	-	-
WEAVING & RELATED	683	32	-	5	27	-
HOSIERY KNITTING	684	5	-	-	5	-
KNIT, EXCEPT HOSIERY	685	18	-	12	6	-
PUNCH, CUT, FORM RELAT	686	14	-	7	6	-
TEXTILE MACHINE WORK	689	76	.1	41	36	-
PLASTICS, SYNTHETICS,	690	530	.7	194	336	-
INSULATED WIRE&CABLE	691	87	.1	57	30	-
FABRICATION OF PROD	692	57	.1	31	26	-
MODELMAK, PATTERNMAK	693	-	-	-	-	-
FABRICAT/AMMO ETC	694	4	-	4	-	-
MISC. MACHINE WORK	699	102	.1	57	45	-
FAB/ASBL&REPR METAL	700	45	.1	45	-	-

Licensed Practical Nurse
(D.O.T. 079.378)

Licensed practical nurses provide skilled nursing care to sick, injured, handicapped, and convalescent patients in hospitals, clinics, private homes, sanitariums and other institutions. Under the supervision of physicians and registered nurses they take and record temperature, blood pressure, pulse, and respiration rates. Duties also include the dressing of wounds, giving alcohol rubs and massages, applying compresses, and reporting on the general condition of the patient. They may also administer medication, perform routine laboratory tests, and use some general medical equipment. A licensed practical nurse must pass a state board examination and be licensed by the state.

In Massachusetts, in order for a person to be eligible to take the state board examination, they must file an application with satisfactory proof of good moral character and proof that they have graduated from an approved school of practical nursing or have completed a program of study equivalent to that required for graduation as a practical nurse from an accredited school of professional nursing. The licenses are valid for a period of two years and are renewable upon payment of a fee. Currently in Massachusetts there are approximately 40,000 persons holding active licenses for practical nursing.

Nationally the employment outlook for licensed practical nurses is favorable and is expected to remain so through the mid 1980's. The demand for this occupation will be above the average for all occupations in response to a growing population and the expansion of public and private health care facilities. In addition demand will be generated to replace those who die, retire, or leave the occupation for other reasons. In Massachusetts this demand can be expected to be above the national average as the health service industry is projected to be one of the fastest growing for the state into the 1980's.

Field surveys on licensed practical nurses were conducted at nursing homes and hospitals in all of the labor market areas with the exception of the Boston SMSA. Information regarding the Boston SMSA was derived from the report "An Analysis of Sources of Labor Supply to High Demand Occupations in the Boston SMSA", prepared by the Research Department of the Massachusetts Department of Manpower Affairs.

Sources of Recruitment

The sources of recruitment surveyed included use of agencies, advertising, internal recruitment, and direct applications. The most widely used source statewide was direct applications with 85 percent of the establishments surveyed stating that this method of obtaining licensed practical nurses was used. In Brockton, Fall River, New Bedford, and Pittsfield all of the employers stated that direct applications were used to some extent. Lawrence and Worcester had the lowest use of direct applications with 60 percent of the employers interviewed utilizing this method. The second most widely used method of recruitment was advertising, in this case, use of newspaper ads. In only two of the labor market areas, New Bedford and Worcester, did all of the employers surveyed make use of advertising. However, in all of the areas a majority did rely on this method to some degree. Use of agencies and internal recruitment were other methods of recruitment utilized by employers. In the case of agency use, the majority went directly to the placement offices of educational facilities that provided training for the occupation. Referrals from current employees was the most popular form of internal recruitment used by the employers surveyed; however some of them did state that they relied on promotions and rehires to fill some of their LPN needs.

In the area of the most frequent source of recruitment utilized statewide there was no clear cut majority favoring one particular method. The greatest number (39%) said their most frequent source was the use of an agency, in this case, educational institutions. The second most popular method of recruitment was direct applications with 27 percent indicating that this was used most frequently. The Worcester Labor Market Area was the only one where all of the employers surveyed used the same source most frequently.

TABLE I

Sources of Recruitment
For Licensed Practical Nurse by Labor Market Area

	State-wide		Brockton Fall River		Fitchburg		Lawrence		Lowell		New Bedford		Springfield		Worcester		Boston		Pittsfield		
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	
TOTAL	66	100	5	100	5	100	5	100	6	100	5	100	5	100	5	100	19	100	6	100	
Use of an Agency	44	66	4	80	3	60	3	60	2	40	3	50	2	40	5	100	13	68	4	66	
(1) public	15	23	1	20	2	40	1	20	-	-	2	33	2	40	-	-	2	10	1	16	
(2) private	5	8	0	-	1	20	1	20	-	-	1	16	-	-	-	-	1	5	1	16	
(3) educational	36	54	3	60	3	60	3	60	2	40	3	50	1	20	4	80	5	100	5	33	
Advertising	49	74	4	80	3	60	3	60	3	60	3	50	5	100	4	80	5	100	14	74	
(1) newspapers	48	73	4	80	3	60	3	60	3	60	3	50	5	100	3	60	5	100	14	74	
(2) trade journals	1	2	1	20	-	-	-	-	-	-	-	-	0	-	-	-	0	-	-	-	
(3) professional association	2	3	1	20	-	-	-	-	-	-	-	-	1	20	-	-	0	-	-	-	
Internal Recruitment	47	71	5	100	5	100	5	100	1	20	5	83	5	100	5	100	1	20	14	74	
(1) rehires	21	32	4	80	5	100	1	20	-	-	1	16	5	100	5	100	0	-	-	-	
(2) promotions	17	26	0	-	4	80	5	100	2	33	1	20	5	100	1	20	0	-	-	-	
(3) referrals from employees	40	61	4	80	5	100	2	40	1	20	4	66	4	80	5	100	1	20	14	74	
Direct Applications	56	85	5	100	5	100	4	80	3	60	4	66	5	100	4	80	3	60	17	89	
Most Frequent Source	26	39	1	20	-	3	60	1	20	2	33	2	40	4	80	5	100	7	37	1	16
Agencies	2	3	-	-	-	-	-	-	-	-	1	20	1	20	-	-	-	-	-	-	-
public	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
private	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
educational	24	36	1	20	3	60	1	20	2	33	1	20	3	60	5	100	7	37	1	16	
Advertising	12	18	2	40	1	20	3	60	3	60	3	60	0	-	-	-	2	10	1	16	
newspapers	12	18	2	40	1	20	3	60	3	60	3	60	0	-	-	-	2	10	1	16	
trade journals	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
professional association	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Internal	8	12	1	20	1	20	1	20	-	2	33	0	-	-	-	-	4	21	-	-	-
rehires	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
promotions	1	2	-	-	1	20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
referrals from employees	7	11	1	20	-	-	-	-	-	2	33	-	-	-	-	-	4	21	4	21	4
Direct Applications	18	27	1	20	4	80	1	20	1	20	2	33	1	20	-	-	4	21	4	21	4

In Worcester educational institutions was the most frequent source used by all of the establishments interviewed.

Overall the survey showed that employers take advantage of all avenues available to them in recruiting to fill their LPN needs. There was no area in which there was negative response, although advertising in trade journals and through professional associations were the least used possible sources. For the net high demand occupation of Licensed Practical Nurse, Massachusetts employers are multi-mechanism recruiters.

Wages

Entry wages for Licensed Practical Nurses with no experience ranged from a low of \$3.00 per hour to a high of \$4.95 per hour. Starting wages for those with one year experience had a range from \$3.65 per hour to \$5.20 per hour. In general starting wages were higher with one year experience in all of the labor market areas surveyed.

Average hourly earnings for a licensed practical nurse ranged from \$4.28 per hour to \$5.04 per hour. The highest average hourly wages were paid in the Brockton Labor Market Area; however this was due to the fact that in most of the establishments surveyed, the majority of the LPN's employed were earning very close to the maximum on the pay scales. This would seem to indicate that there is a rather low turnover rate for this occupation in that area. The second highest average wages were in the Boston SMSA with \$4.88 per hour.

The lowest average wages were reported for the New Bedford Labor Market Area, with \$4.28 per hour, followed by Worcester Labor Market Area with \$4.45 per hour.

Average Hourly Earnings
L. P. N.
by Labor Market Area

	Average Hourly Wage	Rank
Boston	4.88	2
Brockton	5.04	1 *
Fall River	4.50	7
Fitchburg	4.75	4
Lawrence-Haverhill	4.52	6
Lowell	4.75	4
New Bedford	4.28	9
Pittsfield	4.57	5
Springfield	4.83	3
Worcester	4.45	8

* See narrative.

Entry Wages
Licensed Practical Nurses

Total Firms	With No.	Prev. Exp.	With 1 yr.	Prev. Exp.
	44	100.0%	43	100.0%
Wages under 3.50	3	6.8	1	2.3
3.50 - 3.59	1	2.3	0	-
3.60 - 3.69	2	4.5	1	2.3
3.70 - 3.79	2	4.5	2	4.7
3.80 - 3.89	0	-	1	2.3
3.90 - 3.99	2	4.5	1	2.3
4.00 - 4.09	8	18.2	7	16.3
4.10 - 4.19	1	2.3	2	4.7
4.20 - 4.29	XXX3	6.8	5	11.6
4.30 - 4.39	3	6.8	XXX1	2.3
4.40 - 4.49	11	25.0	6	14.0
4.50 - 4.59	6	13.7	7	16.3
4.60 - 4.69	1	2.3	4	9.3
4.70 - 4.79	0	-	3	7.0
4.80 - 4.89	0	-	0	-
4.90 - 4.99	1	2.3	1	2.3
5.00 and over	0	-	1	2.3

1/ XXX = Median

Growth in the Occupation

Statewide occupational projections to 1985 show employment levels for licensed practical nurses increasing by 50 percent during the period 1974-1985. In addition to openings created by this growth in the occupation, it is anticipated that there will be a large number of openings for replacement needs during this same time period.

The employers surveyed in the various labor market areas indicated that the majority of hires in the occupation were for replacement needs, although some new positions had been created during the 1976-1978 period. This trend of high replacement demand was projected by the employers to continue through 1979.

It can be fairly safely assumed that the trends projected for this occupation will hold true for the coming years. Not only does this area already have an extensive health service industry, but also it is expected to be one of the fastest growing industries into the 1980's. This expansion of health service can be expected to result in an increased demand for workers at all occupational levels.

Annual Average Number of Job Openings
Practical Nurses
By Labor Market Area
1974-1985

	TOTAL	DUE TO GROWTH	DUE TO Replacement
Boston	1,226	431	795
Brockton	569	184	385
Fall River	627	198	429
Fitchburg-Leominster	353	122	231
Lawrence-Haverhill	1,426	480	946
Lowell	617	67	550
New Bedford	736	252	484
Worcester	181	63	118
Springfield Chicopee Holyoke	258	78	180
Pittsfield	661	221	440

Source: Division of Employment Security
Occupation/Industrial Research Dept.

The field survey indicated that the demand for Licensed Practical Nurses would be greater in nursing-convalescent homes than in hospitals.

The increase in demand for Licensed Practical Nurses in long-term care facilities was due to cost-consciousness and regulations concerning staffing patterns contained in Chapter 223, section 75, General Laws of Massachusetts.

The decrease in demand for Licensed Practical Nurses in some hospitals was a combination of reasons the foremost of which is a decline in the average length of hospitals confinement for patients. The decline in length of confinement was attributed to preventative medicine advancement, utilization of outpatient clinics, and the regulations of commercial insurers and Medicaid. Furthermore, many nursing specialties such as cardiac intensive care, renal dialysis, and burns treatment require highly specialized knowledge and training.

Chapter 884, Section 2 of the General Laws requires "that beginning January first, nineteen hundred and eighty-three, every person seeking renewal or licensing hereunder shall provide evidence of such continuing education as the board shall require by regulation, unless the board accepts the training and experience of any such person in lieu of said continuing education requirements". The enforcement of this regulation may impact on Licensed Practical Nurses who have renewed their license every two years, but have not had recent employment in nursing.

Licensed Practical Nurses - Supply in Massachusetts

Currently there are 40,000 registered Licensed Practical Nurses in the Baystate. * Added to this figure yearly are the graduates of the vocational and hospital training programs. During 1978, there were 1,183 new graduates of practical nursing programs throughout the state.

Vocational schools accounted for better than two-thirds of the graduates with 814(69 percent), and hospital programs turned out the remaining 369 (31 percent). The larger labor market areas produced the greater number of graduates. Boston and Springfield each had 632 and 124 respectively.

Eleven schools responded to a brief survey questionnaire. Although they are not actually representative of schools across the state, they still might serve as an indicator of conditions typical with other schools. These schools anticipated slight growth in enrollment over the next two years. They estimate a gradual increase of 4.8 percent between 1978 and 1979 and a 6.6 percent increase between 1978 and 1980. They also indicated that the vast majority of the LPN graduates remained within the labor market area and with their profession. Table 1 provides a Labor Market Area overview of the supply of Licensed Practical Nurses who graduate from Vocational Technical Schools.

Table 2 indicates the number of graduates from approved schools of practical nursing in calendar year 1978.

*Commonwealth of Massachusetts, Board of Registration in Nursing

Table II
Occupational Supply Sources Survey
of Licensed Practical Nurses
by Labor Market Area

Short Term Supply of Students	Brockton LMA Southeast Reg. Tech.	Pittsfield-North Adams LMA		Fall River Duman	Lowell-Law. G. Lowell Tech.	Fitchburg-Leominster Mont. Reg. Leo. Trade	Springfield-Holyoke Western H. S. Putnam Voc. Dean Voc.				
		Pitt. H. S.	Smith McCann								
Total Graduates in June 1978	38	31	20	20	57	26	21	55	40	23	
Estimated Graduates in June 1979	40	30	27	20	57	NA	NA	55	36	21	
Estimated Graduates in June 1980	42	36	21	20	57	NA	NA	55	36	21	
Estimate of Number or Percent of Graduates Who Remain in Their Trade	100%	99	97	80-85	75	NA	86%	NA	95	90	100
Estimate of Number or Percent of Graduates Who Remain in the LMA	100%	69	95	75	81	NA	NA	95	90	95	

Table III
Approved Schools of Practical Nursing

Hospital or Vocational School	Labor Mkt. Area	# of Graduates 1978	Name of School	City or Town
V	Barnstable Cty.	18	Upper Cape Cod Region Voc..Tech.	Bourne
V	Boston SMSA	30	Boston Public School P.N. Program	Boston
V	Boston SMSA	24	Boston Public School Evening Program	Boston
H	Boston SMSA	84	Boston City Hospital	Boston
V	Boston SMSA	40	Essex Agric. & Tech. Inst.	Danvers
H	Boston SMSA	31	Lemuel Shattuck Hospital	Boston
H	Boston SMSA	27	Pondville Hospital	Walpole
V	Boston SMSA	28	Northeast Metropolitan Reg. Voc.Sch.	Wakefield
V	Boston SMSA	165	Henry Peabody School	Norwood
V	Boston SMSA	33	Quincy Vocation Tech. School	Quincy
H	Boston SMSA	49	Shepard Gill School of Mass.	Boston
H	Boston SMSA	29	Soldiers Home School of P. N.	Chelsea
V	Boston SMSA	22	Waltham Voc. Tech. School	Waltham
H	Boston SMSA	70	Youville Hospital School of P. N.	Cambridge
V	Brockton SMSA	38	Southeastern Reg. Voc. Tech. School	Easton
V	Fall River SMSA	57	Diman Regional Voc. Tech. School	Fall River
V	Fitchburg Leominster	21	Leominster Trade High School	Leominster
V	Fitchburg Leominster	26	Montachusets Region Voc. Tech. Sch.	Fitchburg
V	Lawrence Haverhill	40	Greater Lawrence Reg. Tech. Inst.	Andover
V	Lawrence Haverhill	18	Whittier Reg. Voc. Tech. School	Haverhill
V	Lowell	30	Greater Lowell Voc. School P. N.	Tyngsborough
H	Lowell	36	Tewksbury Hospital School of P. N.	Tewksbury
V	Marlboro	32	Assabet Valley Reg. Voc. School	Marlboro
V	Pittsfield	20	Charles H. McCann Tech. School	North Adams
V	Pittsfield	31	Pittsfield Voc. High School	Pittsfield
V	Springfield	23	William J. Dear Voc. School	Holyoke
V	Springfield	20	Smith's Voc. Tech. School	Northampton
V	Springfield	38	Roger L. Putnam Voc. Tech School	Springfield
H	Springfield	43	Western Mass. Hospital	Westfield
V	Worcester	60	David Hale Fanning School of P. N.	Worcester
		TOTAL:	1,183	

ESARS - Employment Service

The Employment Service Automated Reporting System (ESARS) statewide indicates that from October 1, 1977 through March 31, 1978, the number of Licensed Practical Nurses who registered for placement services was 1,114. Thirty-four percent of the LPN's registered for placement service within the Boston SMSA. Of the job orders placed for LPN's within the Boston SMSA, eighty-one percent were filled by applicants referred by the employment service.

Within the Boston SMSA, there were 46 Licensed Practical Nurses who utilized the State Nurses' Registry between October 1, 1977 through March 31, 1978. The number of Registered Nurses using the service was 960. Of the 46 LPN's registered twenty were active in March, 1978.

The Massachusetts State Employment Service maintains a Registry for Private Duty Nurses at hospitals settings. The Registry operates 7 days a week including holidays. (The Unit was fully operational during the February "Blizzard of 78"). To be eligible for private duty referrals the nurse must meet strict established requirements.

The short-term, non-permanent employment attachment of special duty nursing is attractive to both secondary wage-earners and retirees whose annual wages are fixed by pension plans or Social Security requirements.



The Commonwealth of Massachusetts

OFFICE OF THE SECRETARY STATE HOUSE, BOSTON, MASS.

*Rules and Regulations filed in this Office under the provisions of
CHAPTER 30A as amended.*

Filed by _____ DEPARTMENT OF PUBLIC HEALTH _____

LICENSING OF LONG-TERM CARE FACILITIES - FEBRUARY, 1977 COMPILATION

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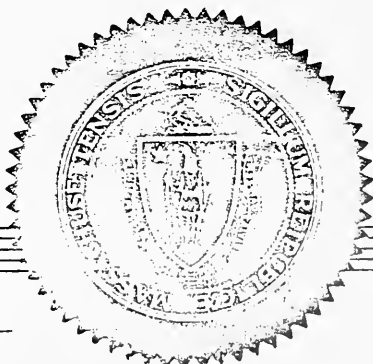
Printed copies of rules and regulations purporting to be issued by authority of any department, commission, board or Officer of the Commonwealth or any city or town having authority to adopt them, or printed copies of any ordinances or town by-laws, shall be admitted without certification or attestations, but if this genuineness is questioned, the court may require such certifications or attestations thereof as it deems necessary.

Attested as a true copy

PAUL GUZZI

Paul Guzzi

SECRETARY OF THE COMMONWEALTH



- 7.1 All facilities shall provide appropriate, adequate and sufficient nursing services to meet the needs of patients or residents and to assure that preventive measures, treatments, medications, diets, restorative services, activities and related services are carried out, recorded and reviewed.
 - 7.1.1 Facilities that provide Level I, II or III care shall provide a 24-hour nursing service with an adequate number of trained and experienced nursing personnel on duty 24 hours per day, seven days a week, including vacation and other relief periods.
 - 7.1.2 Nursing services in facilities that provide Level I, II, or III care shall be in accordance with written policies and procedures.
 - 7.1.3 Facilities that provide only Level IV care are not required to provide organized, routine nursing services. However, nursing services shall be provided as needed to residents in the case of minor illness of a temporary nature.
- 7.2 Minimum nursing personnel requirements
 - 7.2.1 General
 - 7.2.1.1 Nursing personnel shall not serve on active duty more than 12 hours per day, or more than 43 hours per week, on a regular basis.
 - 7.2.1.2 One director of nurses may cover multiple units of the same or different levels of care within a single facility. One supervisor of nurses may cover up to two units of the same or different levels of care within a single facility.
 - 7.2.1.3 Full-time shall mean 40 hours per week, five days per week.
 - 7.2.1.4 The amount of nursing care time per patient shall be exclusive of non-nursing duties.
 - 7.2.1.5 The minimum staffing patterns and nursing care hours as contained herein shall mean minimum, basic requirements. Additional staff will be necessary in many facilities to provide adequate services to meet patient needs.
 - 7.2.1.6 The supervisor of nurses and the charge nurse, but not the director of nurses, may be counted in the calculation of licensed nursing personnel.
 - 7.2.2 Facilities that provide Level I care shall provide:
 - 7.2.2.1 A full-time director of nurses during the day shift.
 - 7.2.2.2 A full-time supervisor of nurses during the day shift, five days a week for facilities with more than one unit. In facilities with a single unit, the director of nurses may function as supervisor.

- 7.2.2.3 A charge nurse 24 hours per day, seven days a week for each unit.
- 7.2.2.4 Sufficient ancillary nursing personnel to meet patient needs.
- 7.2.2.5 As a basic minimum, facilities that provide Level I care shall provide a total of 2.6 hours of nursing care per patient per day; at least 0.6 hours shall be provided by licensed nursing personnel and 2.0 hours by ancillary nursing personnel.
- 7.2.3 Facilities that provide Level II care shall provide:
- 7.2.3.1 A full-time director of nurses.
- 7.2.3.2 A full-time supervisor of nurses during the day shift, five days a week for facilities with more than one unit. In facilities with only a single unit, the director of nurses may function as supervisor.
- 7.2.3.2.1 A SNCFPC shall provide a full-time supervisor of nurses during the day and evening shifts, five days a week, who shall be a registered nurse and shall have had at least two years of nursing experience, one year of which has been in pediatric nursing.
- 7.2.3.3 A charge nurse 24 hours per day, seven days a week for each unit.
- 7.2.3.3.1 A SNCFPC shall provide a charge nurse, 24 hours-a-day, seven days-a-week for each unit, who shall be a registered nurse and shall have had at least one year of full-time training or experience in pediatric nursing.
- 7.2.3.4 Sufficient ancillary nursing personnel to meet patient needs.
- 7.2.3.5 As a basic minimum, facilities that provide Level II care shall provide a total of 2.0 hours of nursing care per patient per day; at least 0.6 hours shall be provided by licensed nursing personnel and 1.4 hours by ancillary nursing personnel.
- 7.2.3.5.1 As a basic minimum, a SNCFPC shall provide a total of 3.0 hours of nursing care per patient per day; at least 1.0 hours of nursing care shall be provided by licensed nursing personnel and 2.0 hours by ancillary nursing personnel.
- 7.2.4 Facilities that provide Level III care shall provide:
- 7.2.4.1 A full-time supervisor of nurses during the day shift, five days a week, in facilities with more than one unit.

- 7.2.4.1.1 A INCFE shall provide a full-time supervisor of nurses during the day shift, five days-a-week, who shall be a registered nurse and shall have had at least two years of nursing experience, one year of which has been in pediatric nursing.
- 7.2.4.2 A charge nurse during the day and evening shifts, seven days a week, for each unit.
 - 7.2.4.2.1 A INCFE shall provide a charge nurse, 24 hours-a-day, seven days-a-week, for each unit, who shall be a registered nurse and shall have had at least one year of full-time training or experience in pediatric nursing.
- 7.2.4.3 A nurse's aide who is a responsible person, on duty during the night shift.
- 7.2.4.4 Sufficient ancillary nursing personnel to meet patient needs.
- 7.2.4.5 As a basic minimum, facilities that provide Level III care shall provide a total of 1.4 hours of nursing care per patient per day; at least 0.4 shall be provided by licensed nursing personnel and 1.0 hours by ancillary nursing personnel.
 - 7.2.4.5.1 As a basic minimum, an INCFE shall provide a total of 2.0 hours of nursing care per patient per day; at least 0.6 shall be provided by licensed nursing personnel and 1.4 hours by ancillary nursing personnel.
- 7.2.4.6 The facility shall provide additional nursing services, sufficient to meet the needs, in the event a patient has a minor illness and is not transferred to a higher level facility or unit.
- 7.2.5 Facilities that provide Level IV care shall provide:
 - 7.2.5.1 A responsible person on the premises at all times.
 - 7.2.5.2 In facilities with less than 20 beds, at least one "responsible person" on active duty during the waking hours in the ratio of one per ten residents.
 - 7.2.5.3 In facilities with more than 20 beds, at least one "responsible person" on active duty at all times during the 24 hours of the day, seven days a week, per unit.
 - 7.2.5.4 If none of the responsible persons on duty are licensed nurses, then the facility shall provide a licensed consultant nurse, four hours per month per unit. (In multiple level facilities the director or supervisor of nurses may function in this capacity).

7.3 Qualifications and Duties

- 7.3.1 Director of Nurses: The Director of Nurses shall be a registered nurse with at least two years of nursing experience, at least one of which has been in an administrative or supervisory capacity. The director of nurses shall be responsible for: development of the objectives and standards of nursing practice and procedures, overall management of nursing personnel, coordination of nursing services, development of staff training programs, and the evaluation and review of patient care and nursing care practices.
- 7.3.2 Supervisor of Nurses: The supervisor of nurses shall be a registered nurse with at least two years of nursing experience, one of which has been in a charge nurse capacity. The supervisor of nurses shall be responsible for: the supervision of nursing care and nursing personnel, the supervision and evaluation of staff assignments and performance, the supervision of patient care, the application and evaluation of patient care plans and the integration of nursing care with other professional services.
- 7.3.3 Charge Nurse: The charge nurse shall be a registered nurse or a licensed practical nurse; provided that, in a Level I or II unit, a practical nurse licensed by waiver may serve in such capacity only if she/he has received a passing grade either on the Massachusetts written state licensure examination given in the years 1953, 1959 and 1960 by the Board of Registration in Nursing or on the federal Public Health Service Proficiency Examination for Practical Nurses Licensed by Waiver given periodically by the Department in accordance with federal regulations. The charge nurse shall be responsible for the performance of total nursing care of the patients in his/her unit during his/her tour of duty with the assistance of ancillary nursing personnel.
- 7.3.4 The Nurse's Aide or the Responsible Person on duty in facilities that provide Level III or IV care shall be readily accessible so that patients or residents can easily report injuries, symptoms, or emergencies. Such person shall be responsible for assuring that appropriate action is taken promptly, and facilities shall be responsible for establishing mechanisms and procedures for the nurse's aide or responsible person to obtain assistance in the case of an emergency.
- 7.3.5 Licensed practical nurses, nurses' aides and orderlies shall be assigned duties consistent with their training and experience.
- 7.3.5.1 A SNCF or INCF shall provide nurses' aides who have training or experience in caring for children. Assignments shall be made so that each patient is cared for by at least one aide who is assigned to care for him on a continuing basis.
- 7.3.6 At no time shall direct patient care be provided by individuals under 16 years of age, housekeeping staff or kitchen workers.
- 7.3.7 Nursing personnel shall not perform housekeeping, laundry, cooking or other such tasks normally performed by maintenance or other personnel.

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